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The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

PAT. & T.M. OFFICE  
BOARD OF PATENT APPEALS  
AND INTERFERENCES

Ex parte STEPHEN D. RUSSELL and RANDY L. SHIMABUKURO

Appeal No. 1999-2016  
Application No. 08/518,051

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**JUN 21 2002**

DIRECTOR OFFICE  
TECHNOLOGY CENTER 2600

ON BRIEF

Before RUGGIERO, SAADAT, and LALL, Administrative Patent Judges.  
LALL, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-11, which constitute all the claims in the application.

The disclosed invention is directed to a simple but novel and unobvious liquid crystal display device that may be programmed to provide a high-resolution gray-scale display. A

typical embodiment shown in Figures 3A and 4 of the disclosure comprises a polarizer for coupling to a source of a beam of light to polarize the beam of light with respect to a polarization angle. A pixel sequence comprising multiple pixels aligned collinearly along the beam of polarized light passing through optically coupled independent liquid crystal display media varies the polarization angle of the beam of light. An analyzer is coupled to multiple liquid crystal display pixels for passing a gray-scale portion of the beam of polarized light as a function of the polarization angle. By appropriately programming the voltage applied to each pixel in one of the independent liquid crystal displays in the pixel sequence, the percentage of light transmitted may be adjusted for each independent liquid crystal display constituting the pixel sequence. This results in a high-resolution display. A further understanding of the invention can be achieved from the following claim.

1. A liquid crystal display, comprising:

a polarizer for coupling to a beam of incident light to polarize the beam of light with respect to a polarization angle;

a pixel sequence coupled to the polarizer comprising multiple liquid crystal display pixels aligned collinearly along the beam of polarized light for varying the polarization angle; and

an analyzer coupled to the polarizer and the pixel sequence to pass a gray-scale portion of the beam of polarized light

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transmitted from the pixel sequence as a function of the polarization angle.

The examiner relies on the following references:

Johary et al. (Johary)	5,196,839	Mar. 23, 1993
Kobayashi et al. (Kobayashi)	5,680,185	Oct. 21, 1997 (filed Apr. 15, 1994)
The Admitted Prior Art		

Claims 1-3, 6, 10, and 11 stand rejected under 35 U.S.C. § 102 as being anticipated by the admitted prior art.

Claims 4, 5, 8, and 9 stand rejected under 35 U.S.C. § 103 as being unpatentable over the admitted prior art in view of Johary.

Claim 7 stands rejected under 35 U.S.C. § 103 as being unpatentable over the admitted prior art in view of Kobayashi.

Rather than repeat the arguments of appellants and the examiner, we make reference to the briefs<sup>1</sup> and the answer for the respective details thereof.

#### OPINION

We have considered the rejections advanced by the examiner and the supporting arguments. We have, likewise, reviewed the appellants' arguments set forth in the briefs.

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<sup>1</sup> A reply brief was filed as Paper No. 14 on January 19, 1999. The examiner noted the entry of the reply brief, see Paper No. 15.

We affirm.

At the outset, we note that appellants discuss claims rejected under each ground of rejection<sup>2</sup> as separate groups.

Rejections under 35 U.S.C. § 102

In our analysis, we are guided by the general proposition that a prior art reference anticipates the subject of a claim when the reference discloses every feature of the claimed invention, either explicitly or inherently, See Hazani v. Int'l Trade Comm'n, 126 F.3d 1473, 1477, 44 USPQ2d 1358, 1361 (Fed. Cir. 1997) and RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984).

The examiner rejects claims 1-3, 6, 10, and 11 under this ground of rejection as being anticipated by the admitted prior art at page 4 of the examiner's answer. Appellants argue (brief at page 5; emphasis added) that:

The prior art shown in Figs. 1-3 discloses a single liquid crystal display medium 10 aligned collinearly along the beam of polarized light. . . . Because Figs. 1-3 of the prior art disclose only a single liquid

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<sup>2</sup> The examiner raises the issue of new matter (final rejection at page 2 and also at page 2 of the examiner's answer) by objecting to the drawing corrections to Figure 4 and Figure 3A, see amendment filed on May 17, 1998 and Letter to Draftsman filed on the same date. However, the examiner approved the entry of this amendment and the corrections, by the advisory action, see Paper No. 10. Therefore, the issue of new matter is not before us.

crystal region 10 lying on the same straight line as the polarized beam of light, the claimed pixel sequence comprising multiple liquid crystal display pixels aligned collinearly along the beam of polarized light recited in claims 1-3, 6, 10, 11 is not anticipated under 35 USC § 102.

The examiner responds (answer at page 6) that "the claim never says that multiple liquid crystal regions are serially arranged in collinear alignment. Instead, the claim recites 'multiple liquid crystal display pixels aligned collinearly'." We agree with the examiner's position. The limitations of claim 1, lines 4-6, recite "a pixel sequence coupled to the polarizer comprising multiple liquid crystal display pixels aligned collinearly . . . ." From this recitation, we agree with the examiner that the claim simply calls for a pixel sequence which comprises of multiple liquid crystal display pixels. As such, Figures 1-3 (prior art) show the display 10 which comprises of multiple liquid crystal display pixels. Appellants have not claimed that the pixel sequence itself comprises multiple wafers as shown in Figure 4, and that each wafer has multiple display pixels. Therefore, the appellants' argument is not commensurate with the scope of the claim. Moreover, we find that appellants at page 8, lines 5-12, of the specification, identify 14 (Figs. 1-3) as the pixel element and further state (lines 10-12) that "[t]ypical LCDs are fabricated from a plurality of pixel elements 14,

usually in a two-dimensional array or display area." According to this language of the specification, the admitted prior art shows typical LCDs, and these LCDs are made from a plurality of pixel elements 14.

Furthermore, appellants argue (reply brief at page 5) that "[n]othing in the above description or in Figs. 1-3 teaches the claimed pixel sequence collinearly aligned with the claimed beam of light. . . ." We are not convinced by appellants' argument. By a comparison of Figure 3 (prior art) and Figure 3A (the invention), it is clear that the pixel sequence, 10 and 14, of the prior art and the pixel sequence 40 of the invention are in collinear alignment with the light beam from source 22 as it passes through the polarizer 16 to the analyzer 17. This finding is further supported by appellants' own observation (brief at page 5) that "[t]he prior art shown in Figs 1-3 discloses a . . . crystal display medium 10 aligned collinearly along the beam of polarized light" (emphasis added).

Therefore, we sustain the anticipation rejection of claim 1 and its grouped claims 2, 3, 6, 10, and 11 as anticipated by the admitted prior art.

Rejections under 35 U.S.C. §103

As a general proposition, in an appeal involving a rejection under 35 U.S.C. § 103, an Examiner is under a burden to make out a prima facie case of obviousness. If that burden is met, the burden of going forward then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness, is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

The examiner uses the following two different combinations of references for these rejections.

Admitted Prior Art and Johary

The examiner rejects claims 4, 5, 8, and 9 under this combination at page 5 of the examiner's answer. Appellants argue these claims as one group at pages 7-9 of the brief. Therefore, we will take claim 8 as representative of this group. The examiner asserts (answer at page 5) that "[a]s to claim 8, active matrix liquid crystal display is well know[n] in a display art."

We agree with the examiner's position. The evidence of such displays being active is provided by appellants' own admission of the prior art, where at page 8, lines 6-23, of the specification, a voltage is applied to the pixel sequence as shown in Figures 1-3, and this voltage is varied according to the polarization angle necessary to achieve a particular display. Therefore, we agree with the examiner that the display pixel sequence in the prior art in Figures 1-3 has an active (voltage activated) matrix for display pixels. Johary is merely cumulative to the rejection of claim 8.

Even though we do not have to reach the argument of the lack of motivation to combine Johary and the admitted prior art (brief at pages 8 and 9) and that Johary does not teach the claimed gray-scale control coupled to at least one pixel of the claimed sequence of pixels (brief at page 7), we do agree with the examiner's position that Johary is properly combined with the admitted prior art, and that Johary does show that it is well known for a gray-scale display circuit to have a programmable gray-scale generators (drivers) to provide gray-scale at the display as shown by Johary (answer at page 5).



Therefore, we sustain the obviousness rejection of claim 8 and its grouped claims 4, 5, and 9 over the admitted prior art in view of Johary.

Admitted Prior Art and Kobayashi

The examiner rejects claim 7 under this combination at pages 5 and 6 of the examiner's answer. Appellants argue (brief at page 9) that "[b]ecause the claimed collinearly aligned pixel sequence is not arrived at by the suggested incorporation of Kobayashi with the cited prior art, claim 7 is not obvious under 35 USC § 103." We find that this is merely a conclusory statement, and not a specific argument to overcome the prima facie case of obviousness of claim 7. However, the examiner responds (answer at page 8) that "Kobayashi is only cited to teach the recitation of claim 7 'a substrate comprises a sapphire' and not the collinearly aligned pixel sequence." We, like the examiner, find that Kobayashi does disclose that a substrate can be made from sapphire, see column 14, lines 39-46. Therefore, we sustain the obviousness rejection of claim 7 over the admitted prior art in view of Kobayashi.

In summary, we have sustained under 35 U.S.C. § 102 the rejection of claims 1-3, 6, 10, and 11 as being anticipated by the admitted prior art; the rejection under 35 U.S.C. § 103 of



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